How to access the BioNet Web Service using Excel Power Query

A BioNet quick guide

Department of Climate Change, Energy, the Environment and Water

Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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How to Access the BioNet Web Service using Power Query

This document provides a quick guide on how to extract data from the BioNet Web Service using Excel with Power Query. It is intended to get you started and does not provide exhaustive guidance on using Power Query. Additional Information on using Power Query is available at: Microsoft Power Query resources.

Who is this guide for?

This guide is intended for users who need to construct customised queries of data held in BioNet Atlas and BioNet Vegetation Classification.

1. Before you begin

The Power Query experience is available in all Excel 2016 or later Windows stand-alone versions and Microsoft 365 subscription plans on the **Data tab** in the **Get & Transform** group.

Before you start, ensure that you are using one of the supported versions of Excel.

Data from BioNet Atlas and BioNet Vegetation Classification have been compiled into entity sets which are defined by the following data standards:

- Species Sighting Data Standard
- Flora Survey Data Standard
- Vegetation Classification Data Standard
- NSW Landscapes Data Standard
- Threatened Biodiversity Data Standard
- Species Names Data Standard
- Thesaurus Data Standard

Access the data standards on the BioNet web services page.

You accept the Terms and conditions of use when extracting data via the BioNet Web Service.
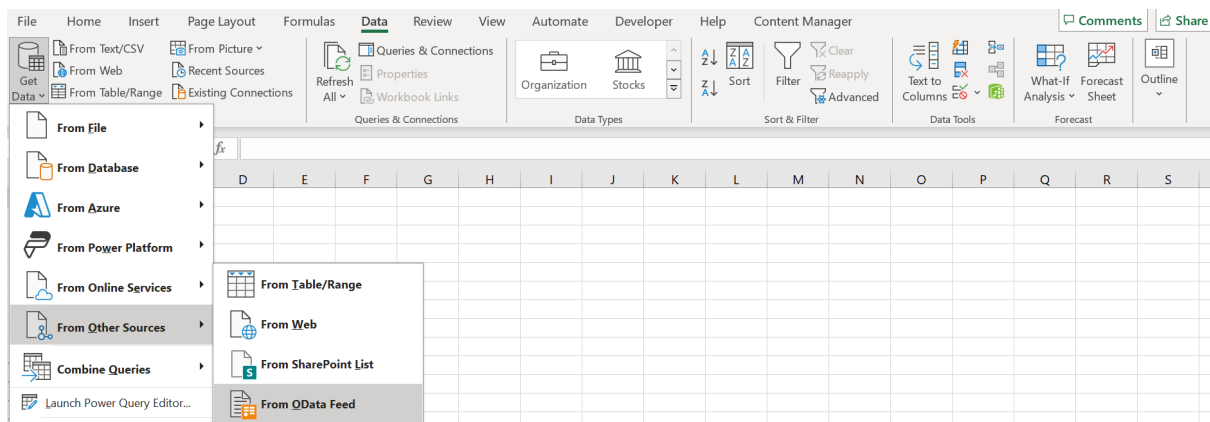
If you see a box like this, it contains important information to stop problems or errors occurring. Make sure you read box information and read the whole document before you start.

2. Connect to the BioNet Web Service using basic authentication

Step 1: Open the Data tab in Excel.
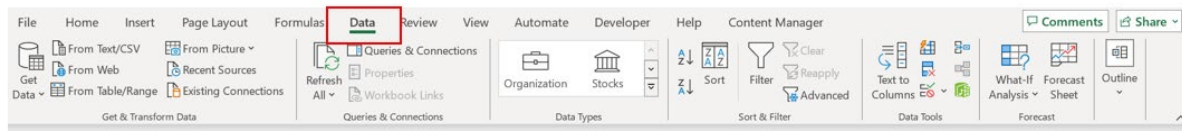
Step 2: In the **'Get Data'** section of the Data ribbon, select '**From Other Sources'** and click on '**From OData Feed'**.

Step 3: In the OData Feed URL dialogue box enter https://data.bionet.nsw.gov.au/biosvcapp/odata and click **'OK'**.

Step 4: The first time you connect to the service a window will appear asking how you would like to access the data.

For registered users of BioNet Atlas, select the Basic option, enter the User name and Password associated with your account, and click '**Connect'**.

Your subsequent queries will return data at the level determined by your BioNet Atlas account credentials.

If you are not a registered user of BioNet Atlas, you can access the public level data by selecting Anonymous and clicking '**Connect'**.

All subsequent queries will be configured against these credential settings. If at any stage you wish to change which credentials you have provided to access the BioNet Web Service, you can do so from the Query Builder Editor (Step 6) by selecting Data Source Settings > Edit Permissions > Edit and updating your credentials.
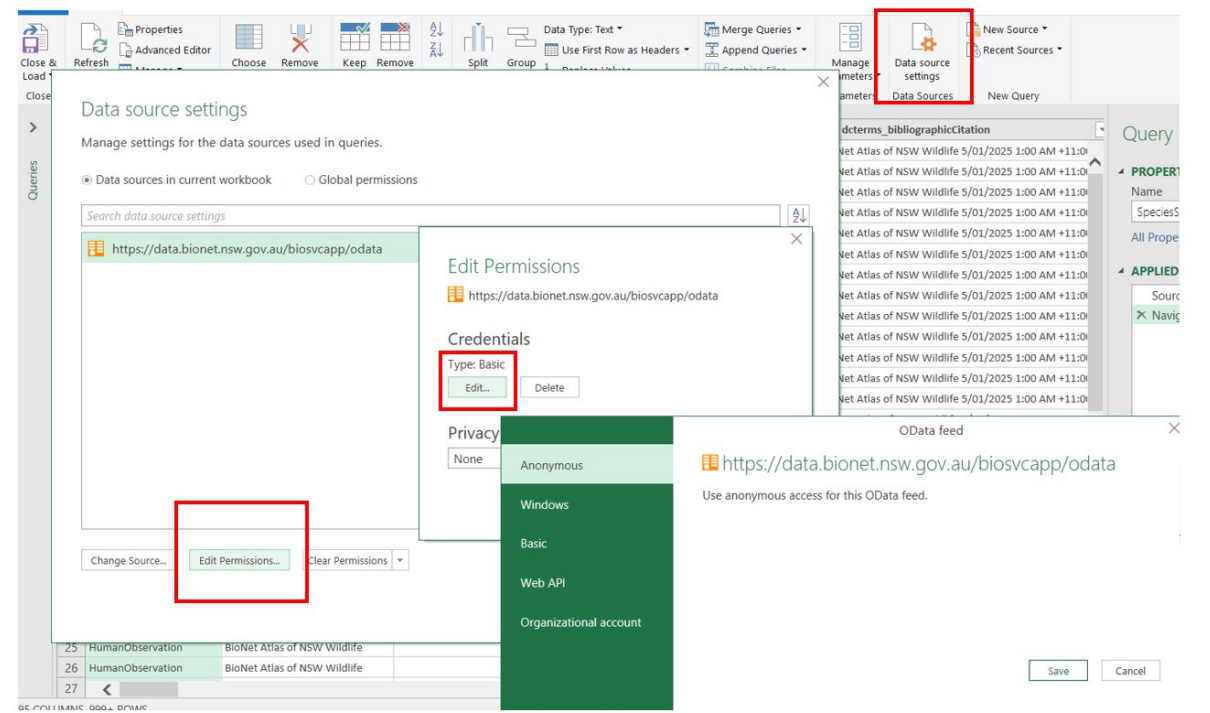
Step 5: Select the entity set (data table) that you want to access and click **'Transform Data'**.
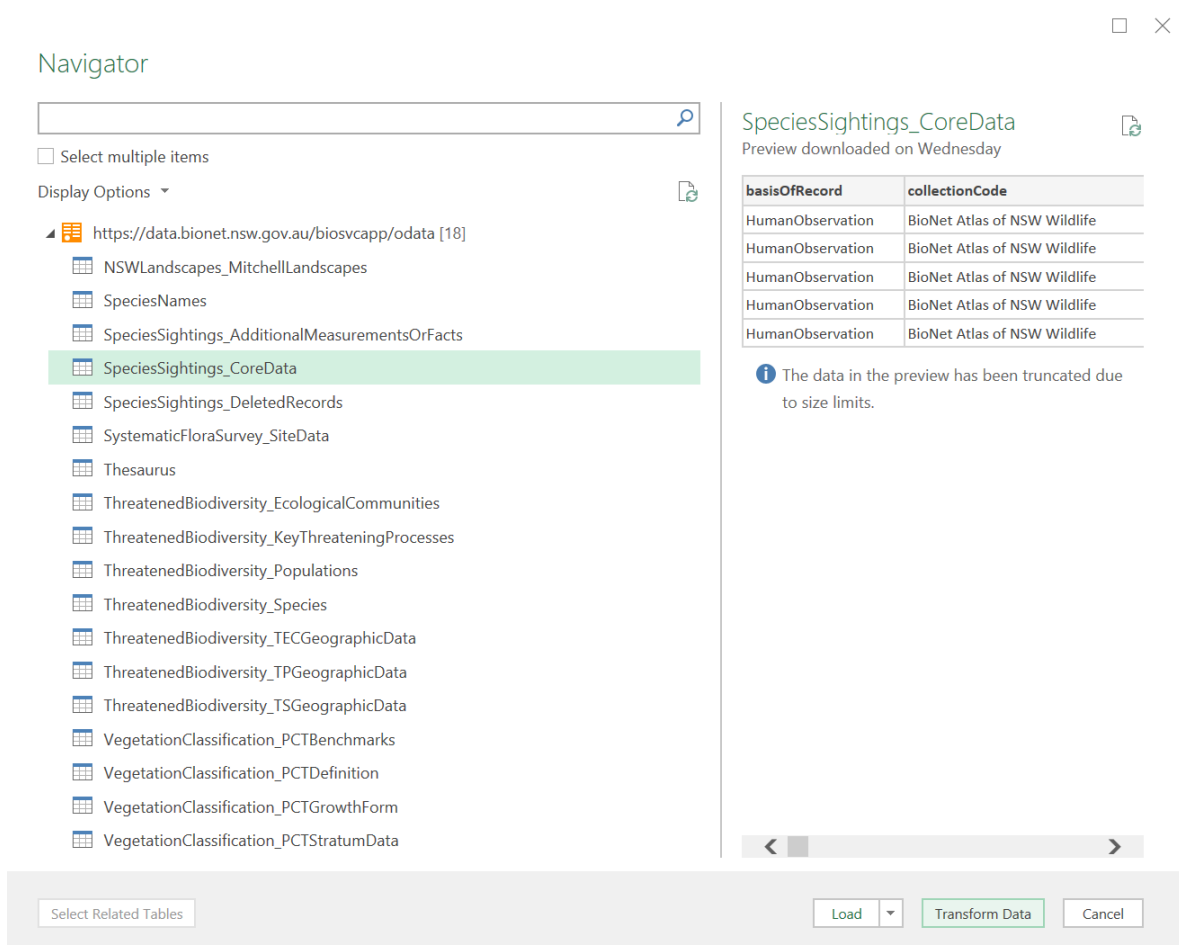
⚠️ If you click 'Load' at this stage, Power Query will try to extract all records to Excel and if the record count in the selected entity set exceeds the Excel row limit the query will fail.

Step 6: You will now see the Power Query Editor window and be able to create your query. See Section 3 of this guide for help on creating a simple query.
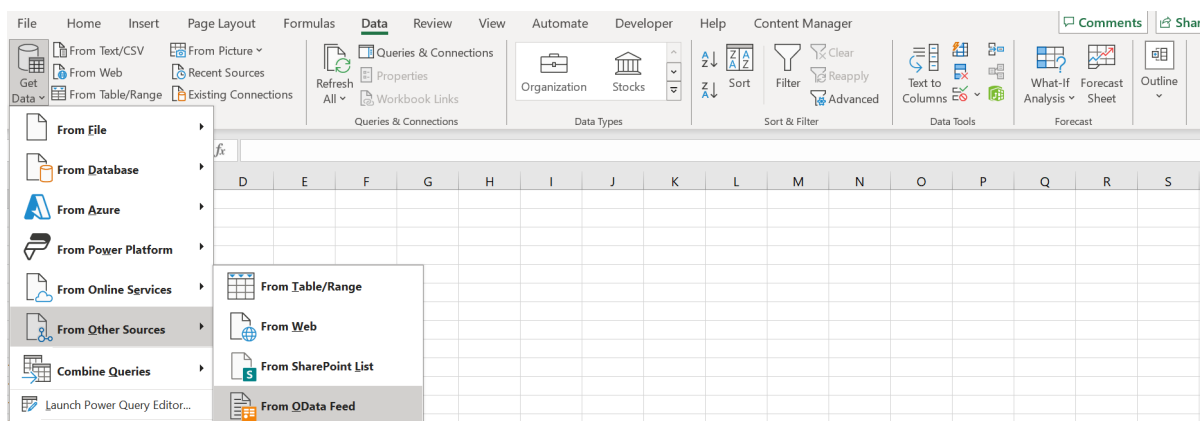
3. Connect to the BioNet Web Service using API token authentication

Users who have a BioNet Atlas account can alternatively choose to pass an API token for authentication. API tokens provide additional security for users and business systems.
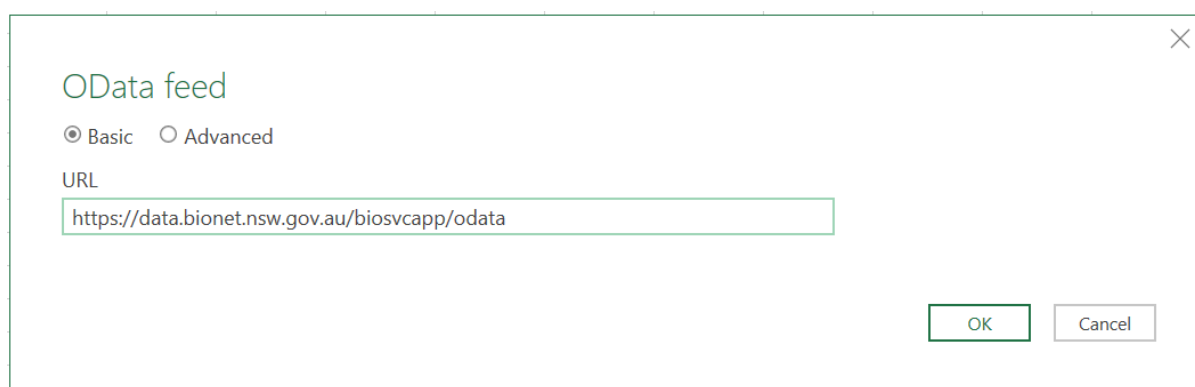
Step 1: Open the **Data** tab in Excel.

Step 2: In the **'Get Data'** section of the Data ribbon, select '**From Other Sources'** and click on '**From OData Feed'**.

Step 3: In the OData Feed URL dialogue box enter https://data.bionet.nsw.gov.au/biosvcapp/odata and click **'OK'**.

Step 4 The first time you connect to the service a window will appear asking how you would like to access the data. Select '**Anonymous'** and click **'Connect'.**
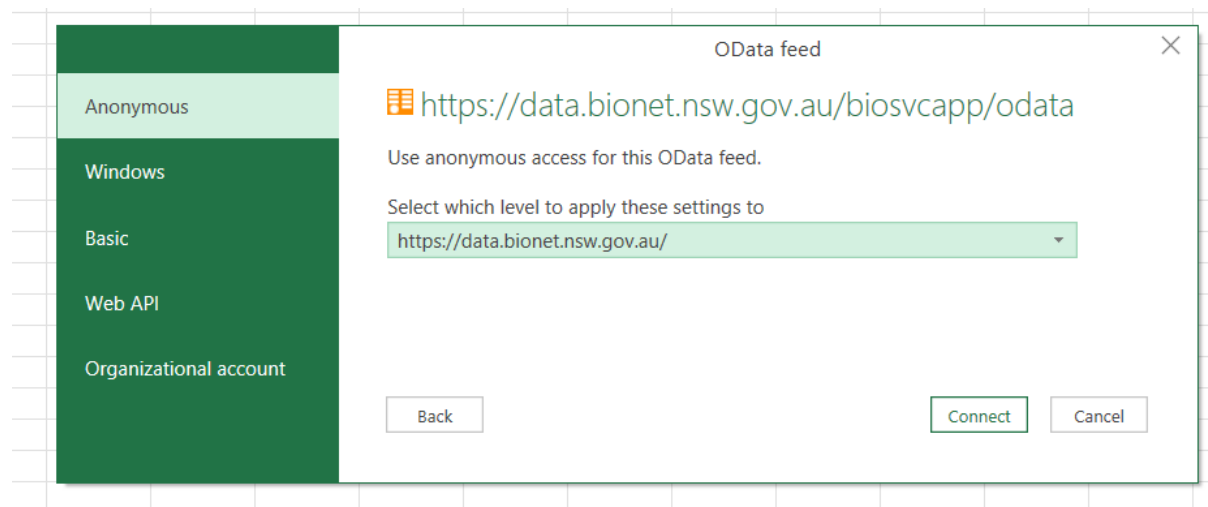
Step 5 Select the entity set (data table) that you want to access and click **'Transform Data'**.
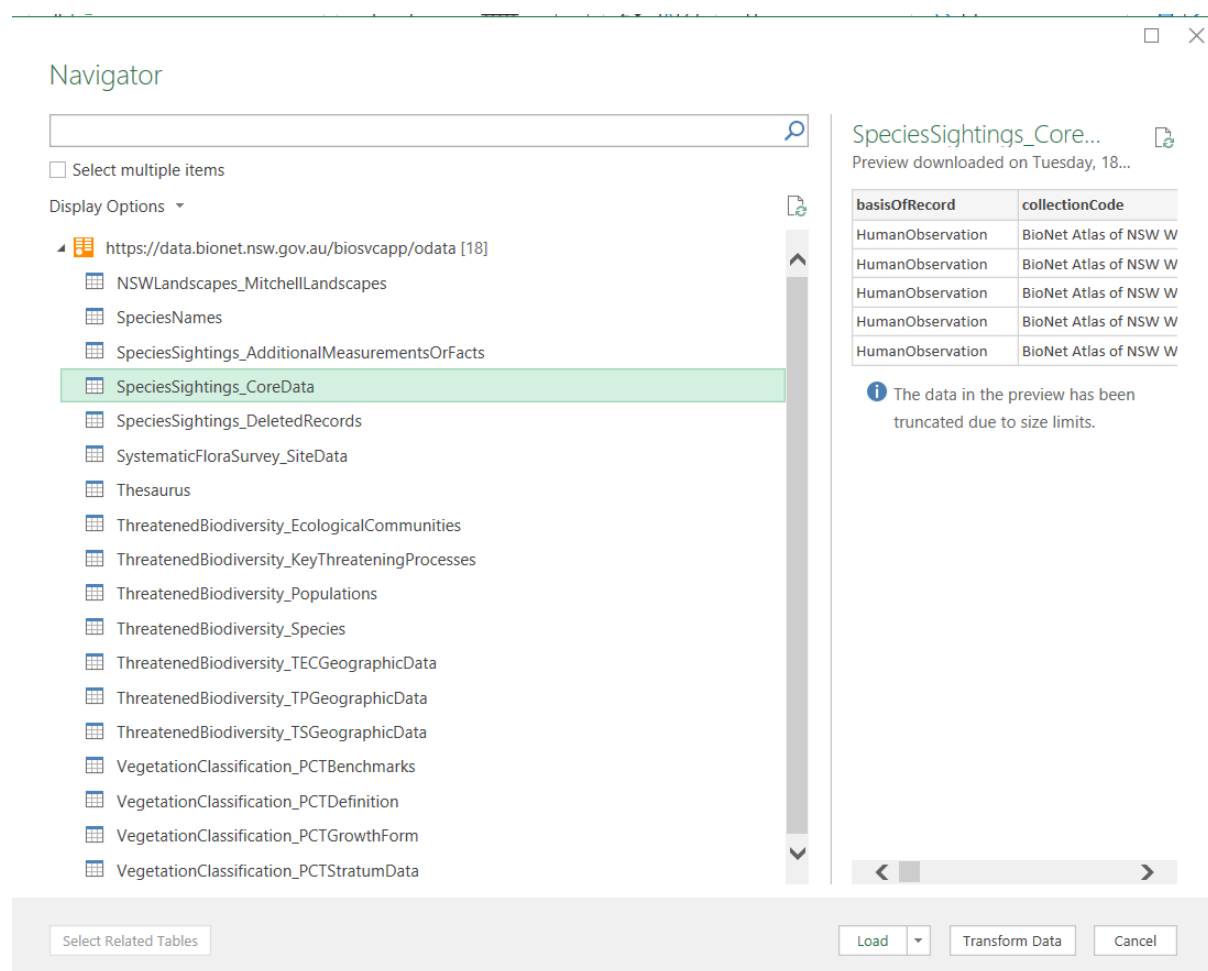
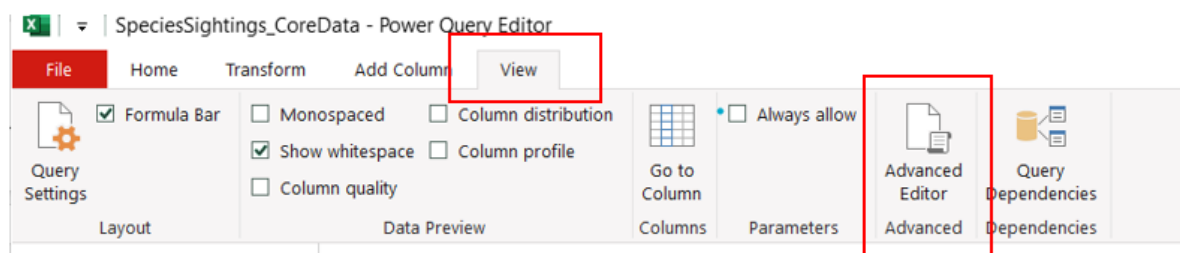**Step 6** Prepare your code to integrate your API token into the Power Query Editor. The API token is passed directly in the code line. To access the code screen, select **View>Advanced Editor.**

The Advanced Editor screen will display.


```
let
    Source = OData.Feed("https://data.bionet.nsw.gov.au/biosvcapp/odata", null, [Implementation="2.0"]),
    SpeciesSightings_CoreData_table = Source{[Name="SpeciesSightings_CoreData",Signature="table"]}[Data]
in
    SpeciesSightings_CoreData_table
```

Replace the line of code

Source = OData.Feed("https://data.bionet.nsw.gov.au/biosvcapp/odata", null, [Implementation="2.0"]),

with

accessToken = "**Paste your API token here**",
    Source = OData.Feed("https://data.bionet.nsw.gov.au/biosvcapp/odata/", null, [Headers = [#"access_token" = accessToken], Implementation="2.0"]),

Step 7 Generate and retrieve your API token

Navigate to the BioNet Atlas API token module and log in by passing your BioNet Atlas credentials. Click **'Generate' API Token'**, then **'Copy API Token'**. You will paste this token when instructed in Step 8.

Note: This module can also be accessed from the User Profile pop-up within BioNet Atlas.

BioNet Data Warehouse : User settings
NSW Department of Climate Change, Energy, Environment and Water

Welcome, **JOHN**

Please log out of this module when you have completed your task

[**Log out**]

Username

bionetatlas_user@yopmail.com

Firstname

John

Surname

Smith

API Token

InQIpwZlh0G5wNw5Db0HItLRSP1kiaqfZfUfRkHSQDY=:T+IOUWqJQ10bWMxTfym16V2fWfaEUmu91l5P/
OHOEAOnAxAsZPtxJfH+gj4zOVwDi0wVvHgvukCqXiNtO7jkfQU4Y7Se7xri

[**Generate API Token**] [**Copy API Token**]

Token issued
17/04/2025

Note: The API token is unique to your user account. Do not share this token. If you generate a new token your old token will be automatically expired.

Step 8

Return to the Power Query Advanced Editor screen. Paste your API token between "Paste your API token here" being careful to not paste over the quotation marks.

accessToken = "Paste your API token here",

becomes

accessToken = "lnQIpwZlh0G5wNw5Db0HItLRSP1kiaqfZfUfRkHSQDY=:T+IOUWqJQ10bWMxTfym16V2fWfaEUmu91l5P/OHOEAOnAxAsZPtxJfH+gj4zOVwDi0wVvHgvukCqXiNtO7jkfQU4Y7Se7xri",

Your code should now resemble the below, but with your unique API token.

SpeciesSightings_CoreData

```
let
    accessToken = "lnQIpwZlh0G5wNw5Db0HItLRSP1kiaqfZfUfRkHSQDY=:T+IOUWqJQ10bWMxTfym16V2fWfaEUmu9115P/OHOEAOnAxAsZPtxJfH+gj4zOVwDi0wVvHgvukCqXiNtO7jkfQU4Y7Se7xri",
    Source = OData.Feed("https://data.bionet.nsw.gov.au/biosvcapp/odata/", null, [Headers = [#"access_token" = accessToken], Implementation="2.0"]),
    SpeciesSightings_CoreData_table = Source{[Name="SpeciesSightings_CoreData",Signature="table"]}[Data]
in
    SpeciesSightings_CoreData_table
```

Select **Done** and you will be returned to the Query Builder screen. You can then begin to construct your query.

4. Building queries and extracting data

This guidance is intended to help get you started with a simple query. It is not exhaustive and serves to illustrate some important limitations and considerations in creating a query.

> ⚠️ Keep your queries as simple as possible. Power Query allows very complex queries to be constructed, but when applied to large datasets performance can be an issue. The best approach is to apply one or 2 filters, select only the columns you want to retain, and download the data. Complete further data processing on your own machine.

4.1 Apply a filter

> ⚠️ You must apply a filter to the columns to reduce the data you extract for some entity sets. If you do not apply a filter, Power Query will try to extract all records and may exceed the row limit in Excel.

Step 1: Click on the header of the column you would like to apply your filter to. In many cases the filter item you are looking for will appear in the drop-down list. Select the item(s) you will filter on and click **'OK'.**
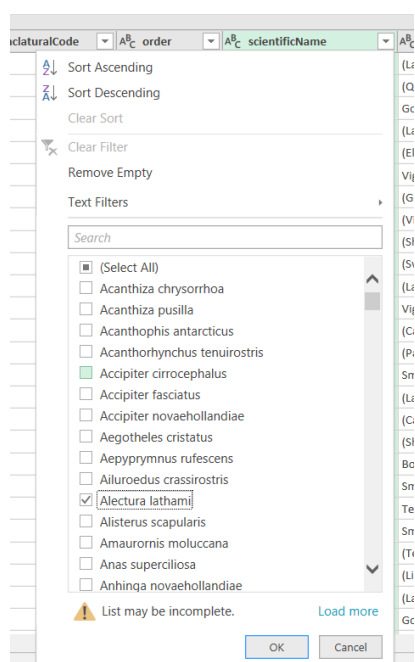
> ⚠️ If what you are searching for does not appear in the filter list, do not click on Load more. This will try to download all records from BioNet to complete the list. Use the text filter (see screen shots below).

Step 2: If the item is not displayed in the drop-down menu by default, click on **'Text Filters'** and use the **'Equals'** option.
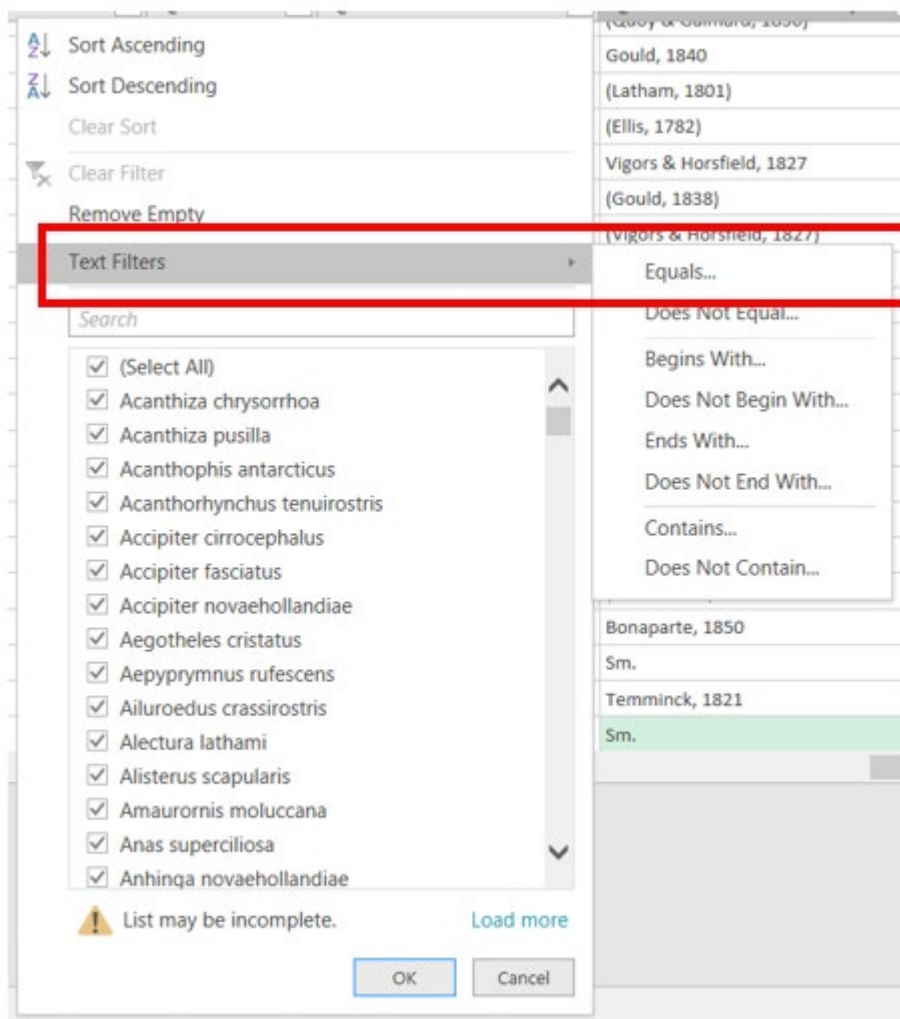
> ⚠️ Using options other than 'Equals' may cause very long running queries and time-outs. Do not use the 'Contains' option as this type of search is not supported by the BioNet Web Service and the query may time out.

Step 3: In the dialogue box that appears, enter what you are searching for. You can include more than one item. Then click **'OK'**.

Step 4: The preview will then display up to the first 1,000 records matching your query. Note that in the Query Editor you may not see all records if they exceed 1,000.

4.2   Reduce the number of columns returned

Selecting only the columns of data you are interested in makes the download quicker and more efficient. This is not a mandatory step.
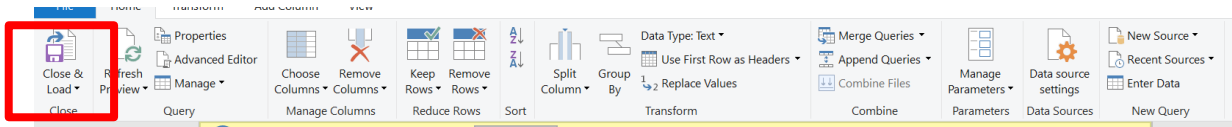
**Step 1:** Click on the '**Choose Columns**' button.
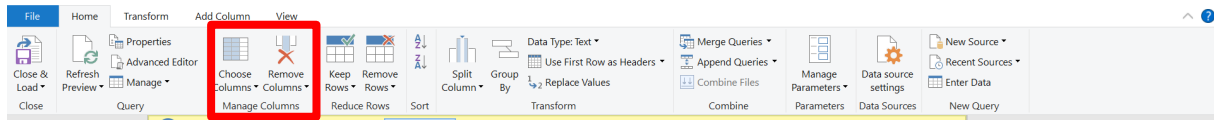
Step 2: Choose your columns from the **Choose columns** window and click '**OK**'.

4.3   Extract the data to the Excel spreadsheet

Step 1: Click on the **'Close & Load'** button to load your data to your spreadsheet.


Step 2: You will be returned to the spreadsheet table. Your data will now commence loading. Note, in the Workbook Queries side bar you will see the query executing and should see the number of rows increasing until it is finished. If you would like to stop it, right click on the query and select **'Cancel'**.
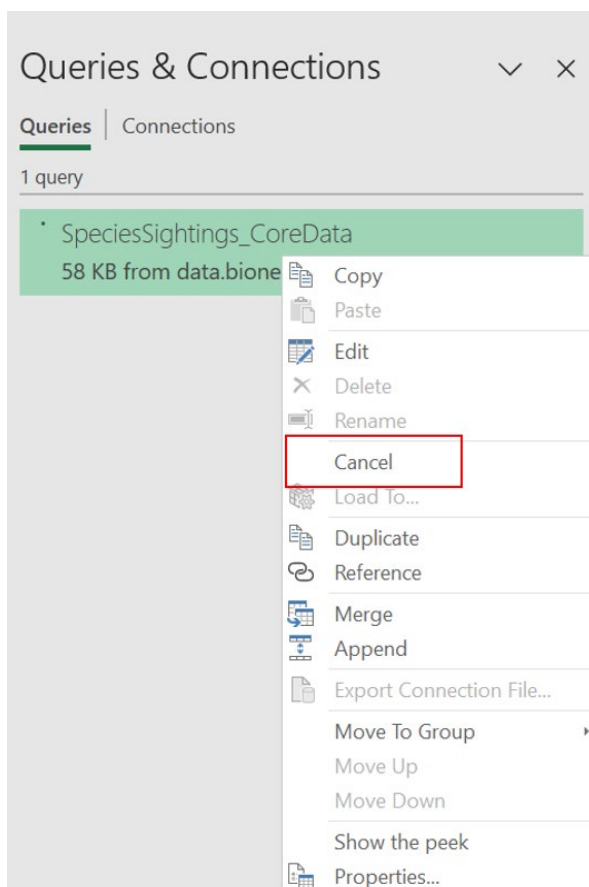
4.4 How to refresh your extracted data

When you save your workbook, the queries that you have created will be saved with it. The next time you open the workbook you can refresh your queries to extract the most up to date data from the Data ribbon by clicking 'Refresh All'.
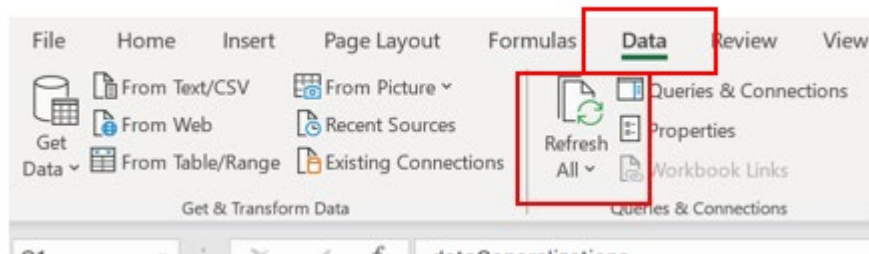
For further information: Contact the BioNet team.